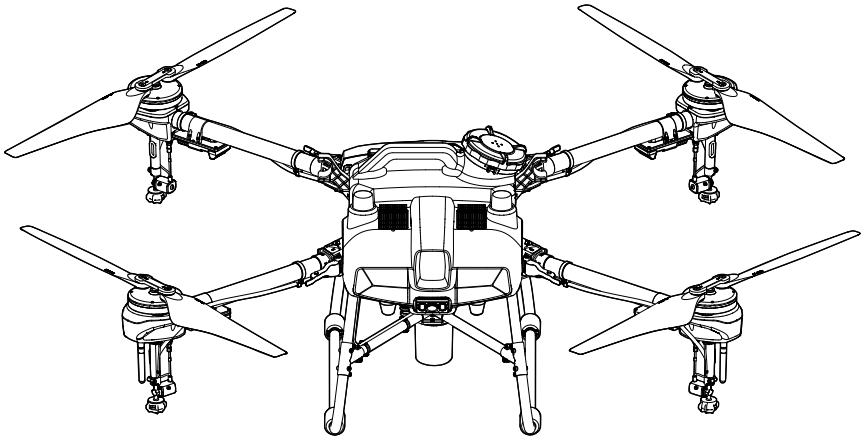
AGRAS T10

User Manual v1.4

2021.07



Searching for Keywords

Search for keywords such as “battery” and “install” to find a topic. If you are using Adobe Acrobat Reader to read this document, press Ctrl+F on Windows or Command+F on Mac to begin a search.

Navigating to a Topic

View a complete list of topics in the table of contents. Click on a topic to navigate to that section.

Printing this Document

This document supports high resolution printing.

⚠ Information

The AGRAS™ T10 may not come with a flight battery in certain regions. Only purchase official DJI™ flight batteries. Read the corresponding Intelligent Flight Battery user guide and take necessary precautions when handling the batteries to ensure your own safety. DJI assumes no liability for damage or injury incurred directly or indirectly from misusing batteries.

Using This Manual

Legend

⚠ Important Hints and tips Reference

Before Flight

The following documents have been produced to help you safely operate and make full use of your aircraft:

1. In the Box
2. Disclaimer and Safety Guidelines
3. Quick Start Guide
4. User Manual

Refer to the Agras T10 In the Box to check the listed parts and read the disclaimer and safety guidelines before flight. Refer to the quick start guide for more information on assembly and basic operation. Refer to the user manual for more comprehensive information.

Downloading DJI Assistant 2 for MG

Download DJI ASSISTANT™ 2 for MG from:
https://www.dji.com/t10/downloads

⚠ The operating temperature of this product is 0° to 45° C (32° to 113° F). It does not meet the standard operating temperature for military grade application (-55° to 125° C (-67° to 257° F)), which is required to endure greater environmental variability. Operate the product appropriately and only for applications that it meets the operating temperature range requirements of that grade.

Safety at a Glance

1. Pesticide Usage

- **Avoid** the use of **powder pesticides** as much as possible as they may reduce the service life of the spraying system.
- **Pesticides are poisonous and pose serious risks to safety. Only use them in strict accordance with their specifications.**
- Residue on the equipment caused by splashes or spills **when pouring and mixing the pesticide can irritate your skin**. Make sure to clean the equipment after mixing.

The Agras T10 aircraft is not a toy and is not suitable for children under the age of 18.

Note that the Safety at a Glance section only provides a quick overview of the safety tips. Make sure you read and understand the Agras T30/T10 Disclaimer and Safety Guidelines and this user manual.

- Use **clean water** to mix the pesticide and filter the mixed liquid before pouring into the spray tank to **avoid blocking** the strainer. **Clear any blockage** before using the equipment.
- Make sure to **stay in an upwind area** when spraying pesticide to avoid bodily harm.
- **Wear protective clothing** to prevent direct body contact with the pesticide. **Rinse your hands and skin** after handling pesticides. **Clean the aircraft and remote controller** after applying the pesticide.
- Effective use of pesticides depends on **pesticide density, spray rate, spray distance, aircraft speed, wind speed, wind direction, temperature, and humidity**. Consider all factors when using pesticides, but DO NOT compromise the safety of people, animals, or the environment in doing so.
- **DO NOT contaminate** rivers and sources of drinking water.
- Disposal of surplus spray: Planning the spray operation helps to ensure only enough pesticide for the area to be treated is purchased and the amount of surplus spray solution is kept to a minimum. It is recommended that any surplus spray or washing liquid in the tank be applied to the crops. Users may also consider installing a pipeline to handle the disposal of the washing liquid in the tank.
- DO NOT use strong acids, strong bases, high-temperature liquids, or pesticides that are explicitly prohibited.

2. Environmental Considerations

- Fly at locations that are **clear of buildings and other obstacles. DO NOT fly above or near large crowds**.
- DO NOT fly over **4.5 km (14,763 ft) above sea level**.
- Only fly in moderate weather conditions with temperatures **between 0° and 45° C (32° and 113° F)**.
- Make sure that your operations do not violate any applicable laws or regulations, and that you have obtained all appropriate prior authorizations. Consult the relevant government agency or authority, or your lawyer before flight to ensure you comply with all relevant laws and regulations.
- **DO NOT operate any part of the aircraft indoors**.

3. Pre-Flight Checklist

Make sure to check all of the following:

- Remote controller and aircraft batteries are **fully charged**.
- All parts are **in good condition**. Replace aged or broken parts before flight.
- **Landing gear and spray tank** are firmly in place.
- **Propellers and frame arms are unfolded and arm locks are firmly tightened**. Propellers are **in good condition and firmly tightened**. There is **nothing obstructing the motors and propellers**.
- There is nothing obstructing the position on the aircraft shell where the upward radar is located underneath.
- **Spraying system is not blocked** and works properly.
- **Compass is calibrated** after being prompted to do so in the app.

4. Ingress Protection Rating Description

When functioning normally, the aircraft is waterproof, dustproof, and corrosion resistant. Under stable laboratory conditions, the aircraft (Intelligent Flight Battery excluded) has a protection rating of IP67 (IEC 60529) and can be cleaned using a small amount of water. However, this protection rating is not permanent and may reduce over time after long-term use due to aging and wear. The product warranty does not cover water damage.

The protection ratings of the aircraft mentioned above may decrease in the following scenarios:

- There is a collision and the seal structure is deformed.
- The seal structure of the shell is cracked or damaged.
- The waterproof covers are not properly secured.

5. Operation

- **Stay away** from the **rotating** propellers and motors.
- Make sure to fly **within the specified max takeoff weight** to avoid potential safety risks.
- The DJI Agras app will intelligently recommend the payload weight limit for the tank according to the current status and surroundings of the aircraft. **Do not exceed the recommended payload weight limit** when adding material to the tank. Otherwise, the flight safety may be affected.
- Maintain a visual line of sight (VLOS) of your aircraft at all times.
- DO NOT use the Combination Stick Command (CSC) or other methods to **stop the motors** when the aircraft is airborne unless in an emergency situation.
- DO NOT answer incoming calls during flight. DO NOT fly under the influence of **alcohol or drugs**.
- If there is **a low battery warning, land the aircraft at a safe location**.
- **If the radar module is unable to work properly in the operating environment**, the aircraft will be **unable to avoid obstacles during Return to Home (RTH)**. All that can be adjusted is **the flight speed and altitude**, as long as the remote controller is still connected.
- After landing, stop the motors, **power off the aircraft, and turn off the remote controller**. Otherwise, the aircraft may enter Failsafe RTH automatically due to remote controller signal loss.
- **Maintain full control of the aircraft at all times and do not rely on the DJI Agras app**. The obstacle avoidance function is disabled in certain situations. Keep the aircraft within VLOS and pay close attention to its flight. Use your discretion to operate the aircraft and manually avoid obstacles in a timely manner. It is important to set an appropriate Failsafe and RTH altitude before each flight.

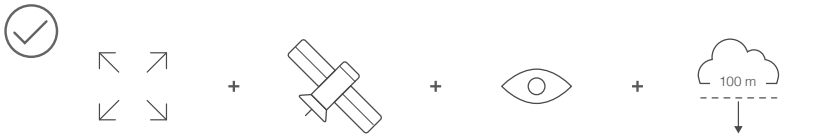
6. Maintenance and Upkeep

- DO NOT use aged, chipped, or broken propellers.
- To avoid damaging the landing gear, **remove or empty the spray tank** during transportation or when not in use.
- Recommended storage temperature (when the spray tank, flow meter, pumps, and hoses are empty): **between -20° and 40° C (-4° and 104° F)**.
- Clean the aircraft immediately after spraying. Inspect the aircraft regularly. Refer to Product Care in the disclaimer and safety guidelines for more information about maintenance guidelines.

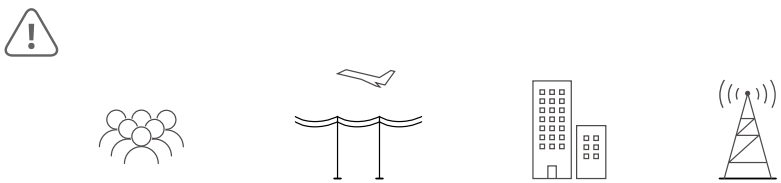
7. Observe Local Laws and Regulations

- You can find a list of DJI™ GEO zones at http://www.dji.com/flysafe. Note that the DJI GEO zones are not a replacement for local government regulations or good judgment.
- **Avoid flying at altitudes above 100 m (328 ft)**.*

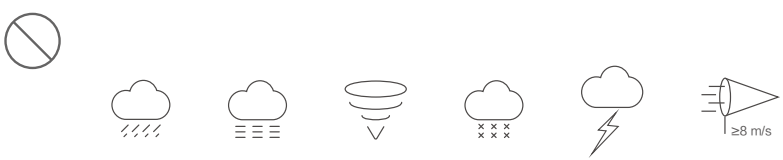
* The flying altitude limit varies in different countries or regions. Make sure to fly at the altitudes outlined by local laws and regulations.



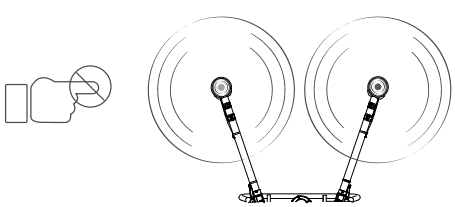
Fly in Open Areas | Strong GNSS Signal | VLOS | Fly Below 100 m (328 ft)



Avoid flying over or near crowds, high voltage power lines, or bodies of water.
Strong electromagnetic sources such as **power lines, base stations, and tall buildings** may affect the onboard compass.



DO NOT use the aircraft in adverse weather conditions such as winds exceeding 28 kph (17 mph), heavy rain (precipitation rate exceeding 25 mm (0.98 in) in 12 hours), fog, snow, lightning, tornadoes, or hurricanes.



Stay away from rotating propellers and motors.

GEO Zones

Learn more at:
http://www.dji.com/flysafe

Contents

Product Profile

Introduction

The Agras T10 features a brand-new design including a quadrilateral folding structure and a quick-release spray tank and flight battery that makes replacement, installation, and storage easy. The updated Route Operation mode includes Connection Routing, which enables the aircraft to automatically fly to a task route and avoid obstacles that have been marked in field planning.

The onboard D-RTK™ can be used for centimeter-level positioning[1] while the dual-antenna technology provides heading measurements and strong resistance against magnetic interference. The aircraft comes equipped with the Spherical Perception Radar System, a pioneering new system for the agriculture industry. Consisting of the Omnidirectional Digital Radar and Upward Radar, the system provides functions such as terrain following, obstacle sensing, and obstacle circumventing. With the forward and backward FPV cameras and bright spotlights, the system comprehensively ensures operational safety day and night in different weather.

The spraying system comes equipped with an 8L spray tank, four sprinklers, and a 2-channel electromagnetic flow meter that provides even and accurate spraying so that users can save liquid and reduce operating costs.

The aircraft has a protection rating of IP67 (IEC 60529) and the core components boast three layers of protection, making the T10 corrosion-resistant, dustproof, and waterproof so that it can be washed directly with water.

The Smart Controller Enterprise uses DJI OCUSYNC™ Enterprise transmission technology, has a max transmission distance of up to 7 km[2], and supports Wi-Fi and Bluetooth. The remote controller is equipped with a 5.5-inch bright, dedicated screen that has the brand new DJI Agras app built-in, significantly improving smoothness and stability. When the RTK dongle is connected to the remote controller, users can plan operations to centimeter-level precision. The Multi-Aircraft Control mode[3] of the remote controller can be used to coordinate the operation of multiple aircraft at the same time, enabling pilots to work efficiently. Both the built-in battery and external battery can be used to supply power to the remote controller. The remote controller has a working time of up to 4 hours, making it ideal for long and high-intensity operations.

Feature Highlights

The T10 features a brand-new quadrilateral folding structure design for quick folding and easy storage. Both the battery and spray tank are easily swappable, significantly improving the efficiency of power and liquid supply. Folding detection sensors built into the frame arms enable the aircraft to perform a folding mechanism self-check ensuring the arms are properly unfolded.

The aircraft supports centimeter-level positioning when used with the onboard D-RTK while the dual-antenna technology provides strong resistance against magnetic interference. Users have clear views of the front and rear of the aircraft thanks to the dual FPV cameras.

The updated Route operation mode includes Connection Routing. In Connection Routing, the aircraft will automatically return to a task route. Users can mark obstacles outside the task area during field planning for the aircraft to avoid and also add connection points for the aircraft to travel through along the connection route back to the task route.

[1] Must be used with a DJI D-RTK 2 High Precision GNSS Mobile Station (sold separately) or a DJI-approved Network RTK service.

[2] The remote controller is able to reach its maximum transmission distance (FCC/NCC: 7 km (4.35 mi); SRRC: 5 km (3.11 mi); CE/KCC/MIC: 4 km (2.49 mi)) in an open area with no electromagnetic interference, and at an altitude of approximately 2.5 m (8.2 ft).

[3] Make sure to comply with local laws and regulations when using Multi-Aircraft Control mode.

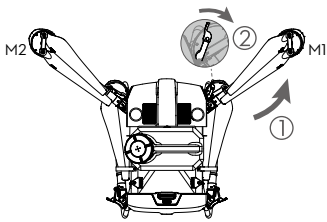
The crosshair can be used to add boundary and obstacle points in field planning, making operations easier than ever for users. The aircraft can perform variable rate fertilization by importing prescription maps to the remote controller and applying them to fields.

The Spherical Radar System consists of the Omnidirectional Digital Radar and Upward Radar, providing altitude detection and stabilization in forward, backward, and downward directions as well as obstacle sensing in all horizontal directions and upward direction when in Route, A-B Route, and Manual Plus operation modes. The radar can detect the angle of a slope and automatically adjust to maintain the same distance with the surface even in mountainous terrain. In Route and A-B Route operation modes, the radar can effectively sense obstacles and plan a route to actively circumvent obstacles. Obstacle circumvention is disabled by default and must be enabled in the app.

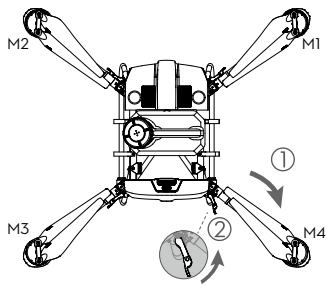
The spraying system is equipped with four sprinklers and a 2-channel electromagnetic flow meter to ensure even and accurate spraying as well as to reduce operating costs.

Multi-Aircraft Control mode enables users to coordinate the operation of multiple aircraft simultaneously with one remote controller. Users can switch between different aircraft in the app.

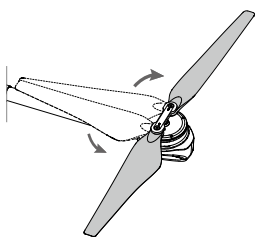
Preparing the Aircraft



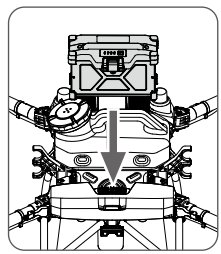
Unfold the M1 and M2 arms, and fasten the two arm locks. Avoid pinching fingers.



Unfold the M3 and M4 arms, and fasten the two arm locks. Avoid pinching fingers.



Unfold the propeller blades.



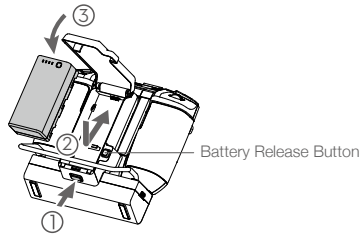
Insert the Intelligent Flight Battery into the aircraft until you hear a click.

- Make sure that the battery is firmly inserted into the aircraft. Only insert or remove the battery when the aircraft is powered off.
- To remove the battery, press and hold the clamp and lift the battery up.
- Fold the M3 and M4 arms followed by the M1 and M2 arms and make sure that the arms are inserted into the storage clamps on both sides of the aircraft. Otherwise, the arms may be damaged.

Preparing the Remote Controller

Mounting the External Battery

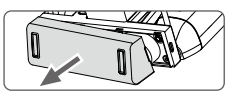
① Press the battery cover release button on the back of the remote controller down to open the cover.
② Insert the Intelligent Battery into the compartment and push it to the top.
③ Close the cover.



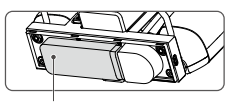
To remove the Intelligent Battery, press and hold the battery release button and push the battery downward.

Mounting the 4G Dongle and SIM Card

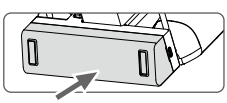
- Only use a DJI-approved dongle. The dongle supports various network standards. Use a SIM card that is compatible with the chosen mobile network provider and select a mobile data plan according to the planned level of usage.
- The dongle and SIM card enable the remote controller to access specific networks and platforms such as the DJI Agras Management Platform. Make sure to insert them correctly. Otherwise, network access will not be available.



Remove the dongle compartment cover.



Make sure the SIM card is inserted into the dongle. Insert the dongle into the USB port and test the dongle.*

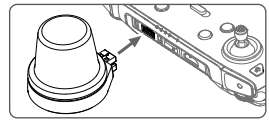


Reattach the cover firmly.

* Test procedure: press the remote controller power button and press again and hold to power on the remote controller. In DJI Agras, tap ⚙, and select Network Diagnostics. The dongle and SIM card are functioning properly if the status of all the devices in the network chain are shown in green.

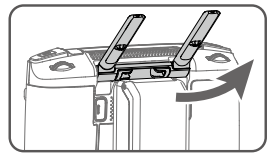
Mounting the RTK Dongle (Optional)

When using the RTK planning method to plan the task area, attach the RTK dongle to the USB-A port on the remote controller.

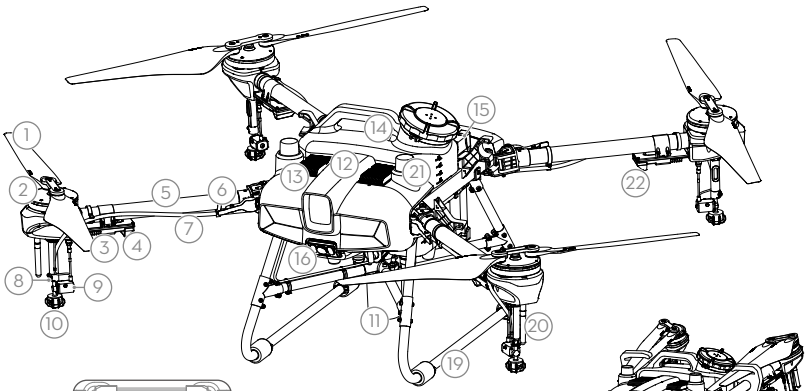


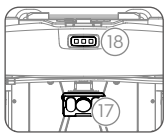
Adjusting the Antennas

Lift and adjust the antennas. The strength of the remote controller signal is affected by the position of the antennas. For an optimal connection between the remote controller and aircraft, make sure the angle between the antennas and the back of the remote controller is 80° or 180°.

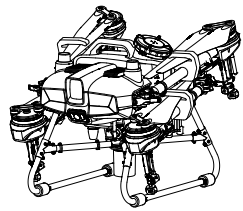


Aircraft Overview





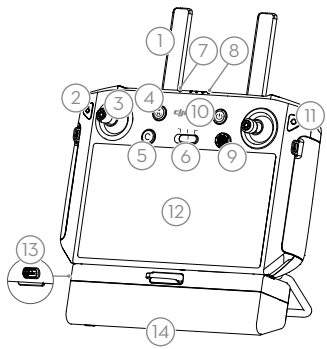
Rear View



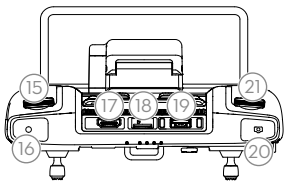
Folded

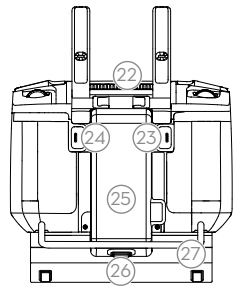
1. Propellers
2. Motors
3. ESCs
4. Aircraft Front Indicators (on two front arms)
5. Frame Arms
6. Folding Detection Sensors (built-in)
7. Hoses
8. Sprinklers
9. Electromagnetic Exhaust Valves
10. Nozzles
11. Omnidirectional Digital Radar
12. Upward Radar (built-in)
13. Heat Sinks
14. Spray Tank
15. Battery Compartment
16. Forward FPV Camera
17. Backward FPV Camera
18. Aircraft Status Indicators
19. Landing Gear
20. OcuSync Antennas
21. Onboard D-RTK Antennas
22. Aircraft Rear Indicators (on two rear arms)

Remote Controller Overview



1. Antennas
   Relays aircraft control and image transmission signal.
2. Back Button / Function Button
   Press once to return to the previous page Hold to view a guide to using button combinations. Refer to Button Combinations (p. 37) for more information.
3. Control Sticks
   Controls aircraft movement. Control mode can be set in the app.
4. RTH Button
   Press and hold this button to initiate RTH.
5. Button C3 (customizable)
6. Flight Mode Switch
   The three positions are P-mode (Positioning), A-mode (Attitude), and P-mode (Positioning).
7. Status LED
   Indicates whether the remote controller is linked to the aircraft.
8. Battery Level LEDs
   Displays current battery level of the internal battery.
9. 5D Button (customizable)
10. Power Button
    Used to power the remote controller on and off. When the remote controller is powered on, press the button to enter sleep mode or to wake up the controller.
11. Confirm Button
    Press to confirm a selection.
12. Touch Screen
    Tap to select. Android-based device to run DJI Agras.
13. USB-C Charging Port
    Use to charge the remote controller.
14. Dongle Compartment Cover
    Open the cover to mount or remove the 4G dongle.





15. Spray Rate Dial
    Turn to adjust the spray rate in Manual operation mode.
16. Spray Button
    Press to start or stop spraying in Manual operation mode.
17. HDMI Port
    For video output.
18. microSD Card Slot
    Used to insert a microSD card.
19. USB-A Port
    Used to connect devices such as an RTK Dongle, or to connect to a computer to update firmware and export logs via the DJI Assistant 2 software.
20. FPV / Map Switch Button
    In Operation View in DJI Agras, press to switch between FPV and the Map View.
21. Reserved Dial
22. Air Outlet
    Used for heat dissipation. DO NOT cover the air vent during use.
23. Button C1 (customizable)
    When planning a field, press the button to switch between Obstacle mode and Waypoints mode. The function of the button cannot be customized while planning a field.
    When not planning a field, use the app to customize the button.
24. Button C2 (customizable)
    When planning a field, press the button to add a waypoint or an obstacle point. The function of the button cannot be customized when planning a field.
    When not planning a field, use the app to customize the button.
25. Battery Cover
    Open the cover to mount or remove the Intelligent Battery from the remote controller.
26. Battery Compartment Cover Lock
    Press the lock to open the cover.
27. Handle

